A

SYNOPSIS

ON

"FLORISTIC COMPOSITION AND SPECIES DIVERSITY OF UTNOOR FOREST OF ADILABAD DISTRICT - TELANGANA"

Submitted to

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"FLORISTIC COMPOSITION AND SPECIES DIVERSITY OF UTNOOR FOREST OF ADILABAD DISTRICT OF TELANGANA"

1) INTRODUCTION

The plant wealth of a country is its pride and acquiring knowledge of flora and vegetation is of immense scientific and commercial importance. (Khaleel basha & D. Niaz Parveen 2013). Tropical forests constitute the most diverse plant communities on earth. These forests are disappearing at alarming rates owing to deforestation for extraction of firewood & other forest products. The problem with the chronic form of forest disturbance is that ecosystem often do not get time to recover adequately because the human onslaught never stops. (Ellis, 1987).

Floristic studies are taxonomic studies of a flora of a given area. Floristic studies help us to understand the basic aspects of biology such as speciation, isolation, endemism and evolution. Flora of any area is not fixed up. It changes from time to time, various ecological factors, mostly biotic, change the floristic components. Understanding of forest structure is a pre-requisite to describe various ecological. Processes and also to model the functioning & dynamics of forest (Elourard & et. al. 1997)

Forest and vegetation of particular ecosystem is generally influenced by external factors especially from development activities. The forests of the world play vital role in maintaining and balancing natural eco-system. These forest resources fulfil human demands by providing renewable raw materials and energy, maintain biodiversity and protect land and water resources. These resources are under degradation extensively due to increasing population pressure, agricultural and urban expansion, industrialization, infrastructure development and other disturbances.

At present, subsequent growing developmental activities and continuous pressures on forest resources cause rapid depletion and degradation of the resources. Forest and vegetation of particular ecosystem generally influenced by the external factors especially the man made development activities.

The external environmental factors of disturbance suddenly change the composition of plant structures. The present vegetation composition of a particular ecosystem reflects the site conditions and disturbances over the time. To estimate environmental change at a given site with reference to different current vegetation comprising pristine or potential natural vegetation, a hemeroby concept was developed. The species number found depends on the plot size studied (i.e. species-area relationship); the method cannot be used for cross scale evaluation. According to Karki, 1991, Chaudhary and Kunwar, 2002 , human impact is the major cause leading varying degrees of biodiversity reduction in most of the forested areas.

Humankind development activities entail a change in land use, biodiversity and habitats, running the risk of potential destruction, degradation and fragmentation of natural habitats. Potential repercussions that could occur during construction activities can have temporary or permanent negative impacts on biodiversity and habitats with different intensity, magnitude and size depending on location, ecosystem, location and site size. The potential impact is largely depending on specific habitat conditions, species and the level of awareness of the people surrounding the natural environment. To protect and restore forest resources an integrated assessment tool is necessary to support decision making towards human impacts on forest biodiversity and their use.

Threats to species diversity

The world is facing an accelerated rate of extinction of species largely due to human activities. The four major causes of loss of diversity are known as **"The Evil Quartet".** These are:

- **Habitat Loss and Fragmentation:** Due to pollution, urbanisation and various other human activities, habitat loss and fragmentation is a major cause of loss in species diversity and driving plants and animals extinct.

- **Over Exploitation:** Over-exploitation of natural resources leads to the extinction of many species. E.g. Steller's sea cow, the passenger pigeon, many marine fishes are overharvested

Alien species invasions: When alien species are introduced deliberately or unintentionally, some of them become invasive, leading to the extinction of indigenous species.

Co-extinctions: When a species becomes extinct, the species that are associated with it also becomes extinct

Based on floristic composition and ecological factors the natural vegetation of the Telangana is categoried into the tropical moist deciduous forest, tropical dry deciduous forest, tropical thorn forest, tropical riparian fringing forest, scrub and savanna (Champion & Seth, 1968; Reddy et al. 2015a).

Adilabad district is northern most of Telangana state having largest forest corer area and maximum rainfall in Telangana. Utnoor has a tribal population of 51.97 percent. There are thirty-seven villages in utnoor Mandal. The area of utnoor is 312.64 square kilometer. The soil in this area is mainly black soil.

The present study deals with the floristic composition of utnoor forest of Adilabad district, Telangana, by documenting the floristic composition of the species in the studied area, as well as the medicinal properties. The study will carried out for determination and discrimination of vegetation type and flora registration by Eco-Phytosociology method.

2) REVIEW OF LITRETURE

(Previous work done in the relevant area) :

Champion & Seth (1968) published a detailed account of the forest types of India, Which covers the Telangana. Based on floristic composition and ecological factors the natural vegetation of the Telangana is categorized into the tropical moist

deciduous forest, tropical dry deciduous forest, tropical thorn forest, tropical riparian fringing forest.

Ramachandrachary (1980) studiesd the flora of Achampet taluk in Mahabubnagar district.Narasimha Rao (1986) made a floristic study of Narsapur taluk in medak district and recorded 616 species.Later narasimha Rao and Ramayya (1987) published a paper on biological spectrum of Naersapur. Raghava Rao (1989) explored the flora of Mahabubnagar.

K.Seshagiri Rao (1986) explored the plant wealth of University of Hyderabad campus and listed 420 species. It was the first systematic study for compus flora in Telangana.

Pullaiah, Obulesu and preasanna explored the Adilabad district during 1985 – 89 and recorded 673 species (pullaiah et al.1992).

pullaiah & Rao (1995) explored Nizamabad district and reported 708 species.

Naqvi & Raju (1995, 1998) recorded some plants as additions to the karimnagar.naqvi & Raju environment at karimnagar. Ragan, Geetha & Raju (1998) published a paper on the genus Lipocarpha of Andhra Pradesh.

Pullaiah, Prabhakar and Rao (1998) published flora of Medak district with 708 species.

C.S. Reddy, Naqvi & Raju (2000) collected Rorippa dubia from karimnagar district, which formed a new record for southern India.

C.S. Reddy, Bhanja & Raju (2000) collected and reported Cassia uniform as a new record for Andhra Pradesh.

Telangana (erstwhile Hyderabad State), such a Flora is lacking. The study of the flora of Hyderabad State dates back to the earlier part of the 19th century when Bradley (1849) and Walker (1849) published their pioneer work. It includes agricultural, medicinal and other economically important species of Daulatabad and the present Warangal districts respectively. Patridge (1911) published a consolidated account of 450 species of arborescent forest elements in a book entitled “Forest Flora of Hyderabad”. Later, it was revised by Khan (1953), who dealt with 567 forest species. Meanwhile,

Sayeeduddin (1935-45) was the first to provide a break to this trend of studies. In a series of papers, he recorded 370 plant species

Suxena (1947) made a notable contribution by reporting 115 species of grasses from the Hyderabad State.

Santapau (1954) listed 146 species in his excursion trip to Hyderabad.

During sixties, floristic studies were undertaken by Botanical Survey of India, Southern Circle, Coimbatore in some forest areas now under Telangana: Sebastine et al. (1960) enumerated 268 species from Medak district.

Sebastine & Henry (1966) studied the Flora of Pakhal and the surrounding regions of Narsampet taluk in Warangal district and reported 254 species of 198 genera belonging to 70 families.

Thothathri (1964) studied Nagarjunakonda valley in Nalgonda district and eumerated 251 species.

Rajagopal & Ramayya (1966) worked on the taxonomy of *Heliotropium* from Hyderabad. Subbarao & Kumari (1968) published a small account of 434 species from Kodimial, Mantani and Raikal of Karimnagar district. Champion & Seth (1968) published a detailed account of the forest types of India, which covers the Telangana.

Kapoor & Kapoor (1973) enumerated an additional list of 66 species from Karimnagar district. Rajagopal (1973) made floristic study of Hyderabad and presented 987 species.

Ramachandrachary (1980) studied the flora of Achampet taluk in Mahabubnagar district. Narasimha Rao (1986) made a floristic study of Narsapur taluk in Medak district and recorded 616 species.

Raghava Rao (1989) explored the flora of Mahabubnagar district during 1983-89 and collected 1042 species.

P.N. Rao et al. (1999) studied the flora of Nalgonda district and recorded 586 species. P.S. Reddy (1985) investigated the flora of Warangal city and surroundings and recorded 715 species.

C.S. Reddy, Naqvi & Raju (2000) collected Rorippa dubia from Karimnagar district, which formed a new record for southern India.

C.S. Reddy & Raju (2001) described a new taxon, Cleome chelidonii var. pallai from Pakhal of Warangal. C.S. Reddy (2001) described a new species, Hybanthus vatsavayii from Telangana.

Ramana (2010) recorded 1335 species (including cultivated species) from Greater Hyderabad, which are distributed over 724 genera and 160 families. Ramana, Prasanna & Venu (2012) described a new species, Ledebouria hyderabadensis from Hyderabad. Ramana, C.S. Reddy & Srinivasulu (2012) carried out floristic enumeration of flowering plants of Greater Hyderabad. Reddy et al. (2014) surveyed flora of NRSC Shadnagar Campus in Mahabubnagar district.

Pullaiah (2015) had published 'Flora of Telangana - 29th state of India which accounts for 1891 species belonging to 794 genera and 147 families occur in Telangana state.

Chorghe et al. (2015) has recorded 3 species of grasses as additions to the flora of Telangana from Kawal tiger reserve, Adilabad district.

K.N. Reddy and C.S. Reddy has published 'Flora of Telangana State' has accounted 1911 taxa, is based on the intensive field surveys made by the authors, followed by scrutiny of literature.

Suthari et al. (2016) had documented 470 species from Mallur, Warangal district. Annamma et al. (2016) described a new variety, Justicia quinqueangularis var. kawalii from Indhanpalli range of Kawal tiger reserve.

3) OBJECTIVE OF RESEARCH

1. To study floristic composition that is family, genus, species.
2. To conduct invantorying of angiosperm diversity of Utnoor Forest Area.
3. To make a consolidated and up to date account of the flora of Utnoor Forest Area.
4. Study of Agricultural, Medicinal & Economically and Ethanobotany of forest.
5. To analyse distinction of taxa.
6. To do intensive Exploration of Utnoor Forest Area.
7. Study of endangered species of Utnoor Forest Area.

8. To understand various ecological factors mostly biotic, change of component.

9. To Assess the plant wealth and it's potentiality of Utnoor Forest Area.

4) MATERIALS AND METHODS

1. Method Reconnaissance survey was made during the last week of September, 2009 in order to obtain an impression of the site conditions and to select sampling sites.

2. Sampling Design Systematic sampling following Kent and Coker (1992) and Muller – Dombois and Ellenberg (1974) was used for the study. Sampling sites were arranged along transects in eight (E, NE, N, NW, W, SW, S, SE)

• **The Study Area Location** : Utnoor Forest is admisistratively located in Distirict of adilabad Zone in Oromia National Regional State, 330 km north of Hyderabad 12 km. East of Nekemte, the capital town of East Wollega Administrative Zone. It Covers an area of about 500 ha. The forest lies in the range of latitudes 90 05.10 to 90 06.35 N and longitude 0360 36.47 and 0360 38.10' E The topography of District is 19'40'12"N78'31'48"E The Population density 3,900/km2 Teague is the Native language of Adilabad Marathi basic people also live their.

• **Data Collection** : Extensive survey of the area will be conducted between July 2022 to May 2023 to prepar a l;ist of plant species occurring in different seasons, to register herbaceous, shrubby and arboreal habit plants. The Identification will be done with the help of different Flors and herbaria of Utnoor Forest. Collected Material will be deposited of research center of that is Degloor College Degloor.

The total study area was nearly 500 ha in and around study sites. Observation from each line transect were recorded for various quantitative characteristics relative frequency, relative density and relative dominance were determined by following methods of [Philips EA.1959]. The species richness were identified with the help of Flora of Andhra Pradesh [Pullaiah T. and Ali Moulali, Pullaiah T. and Chennaiah 1997] and Forest flora of Andhra Pradesh[Reddy RD, Prasad, MK, and Venkaiah K. 1991].The main purpose of the phytosociological analysis is to understand floristic vegetation characteristics, to estimate the species richness and diversity which is

existing in the study area, the standard protocols of [Curtis J.T, and McIntosh R.P.1950]and [Muller-Dombois D. and Ellenberg H 1974] have been adapted to analyze the density ,frequency and abundance. for calculation of frequency ,density and abundance the following formulas have to be used.

$$\text{Density} = \frac{\text{Total number of Individuals in all sampling units x100}}{\text{Total number of sampling units studied}}$$

$$\text{Frequency} = \frac{\text{Number of sampling units in which species occur x 100}}{\text{Total number of sampling units}}$$

$$\text{Basal area} = Cbh^2 / 4\pi$$

$$\text{Relative density} = \frac{\text{Density value of species x 100}}{\text{Sum of density value of all species}}$$

$$\text{Relative frequency} = \frac{\text{Frequency value of species x 100}}{\text{Sum of frequency value of all species}}$$

$$\text{Relative dominance} = \frac{\text{Total basal area of the species x 100}}{\text{Total basal area of all specie}}$$

• **Ethenobotanical Data** : Ethenobotanical Data will be collected according different methods like questionnaire , intervieous and discussion suggested by Jain,amount Utnoor Forest Tribal in their local languages . Ethenobotanical Value of Plants will be ascertained in consultation with village People using various methods.

• **Survey – Gap Analysis** : To understand the survey – gap areas specimen locations were overlaid on vegetation type map, gragentation index map, disturbance index map and biological richness map of Utnoor Forest Area. (Reddy 2010)

5) IMPORTANCE OF STUDY

- Floristic composition is one of the important biological, ecological, sociological and edaphic factors of an area.

- It is essential for sustaining all animal life of an area and also for maintaining heritable environment for that life.
- For planning sustainable development adequate knowledge of flora is necessary of that particular area.
- To understand and assess the population structure biodiversity is an important parameter.
- More diverse ecosystem tend to be more productive. E.g. the ecosystem with a great variety of producer species will produce large biomass to support a greater variety of consumer species.
- Greater species richness and productivity makes an ecosystem more sustainable and stable.
- More diverse the ecosystem, greater is the ability to withstand environmental stresses like drought or invasive infestations.
- Species richness makes an ecosystem able to respond to any catastrophe.
- In Species-rich communities, each species can use a different portion of resources available as per their requirement. E.g. plants with smaller roots can absorb water and minerals from shallow soil and plants with deeper roots can tap deeper soil.
- Rich diversity is important for the survival of mankind.
- Healthy biodiversity has innumerable benefits like nutrients storage and recycling, soil formation and protection from erosion, absorption of harmful gases, climate stability.
- Humans get lots of product from nature like fruits, cereals, meat, wood, fibre, raisin, dyes, medicine, antibiotics, etc.
- present study can serve as base line information for monitoring and sustaining the phylodiversity of tropical dry deciduous forest of utnoor.

6) PROPOSED WORK PLAN

Sr.No.	Duration Work	
1	2021	Course Work
2	2022 July - Dec. 2022	Survey & Data Collection
3	July 2023 - Dec. 2023	Survey & Data Collection
4	Jan. 2024 - July 2024	Ethno botanical Study
5	Aug. 2024	-Finalization of obtained result, satisfied analysis and submission of thesis

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